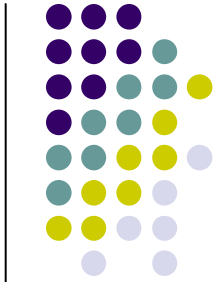
Staff Resource Assessments on License Renewal

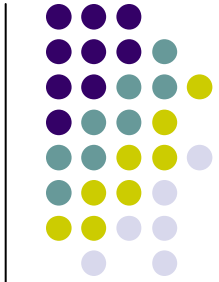
October 4, 2004

Meeting Purpose



- For information to provide background and observations related to the NRC staff efforts and expended resources on completed license renewal applications, examples of power plants include:
  - Robinson
  - Ginna
  - Summer

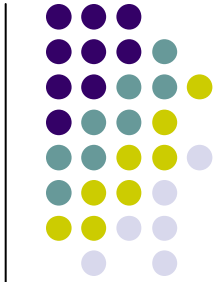
Background



- All 1 unit Westinghouse plants
  - Robinson [construction permit (CP)1967/operating license (OL)1970]: 3 loop
  - Ginna [CP1966/OL1969]: 2 loop
  - Summer [CP1973/OL1982]: 3 loop
- Period of review
  - Robinson, 22 months, 6/17/02 – 4/19/04
  - Ginna, 21.7 months, 8/1/02 – 5/19/04
  - Summer, 20.5 months, 8/6/02 – 4/23/04

Overview

(FTE Expended and Total Cost to the Applicant)



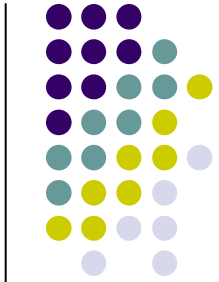
- **Budget Benchmark**
  - **12.8 full time equivalent (FTE, or person-year)**
  - **Total cost per renewal (including environmental contracts cost of $400K) = $3.28M**
- Robinson spent on budget
  - 12.7 FTE
  - Total cost $3.27M
- Ginna spent below budget
  - 10.6 FTE
  - Total cost $2.81M
- Summer spent above budget
  - 15.0 FTE
  - Total cost $3.89M

Resources Expended

Budget benchmark assumes 22 months for the duration of renewal, 12.8 FTE, and $400K for environmental contracts

Plant	Duration of Review (in months)	In-House Staff Resources (FTE)	Safety Contract $ (= FTE)	Environmental Contract $
Robinson	22.0 mos.	12.7 FTE	$0 (= 0 FTE)	$400K
Ginna (DSSA used contractor)	21.7 mos.	10.0 FTE	$147K (= 0.6 FTE)	$395K
Summer (DE used contractor)	20.5 mos	12.9 FTE	$532K (= 2.1 FTE)	$426K

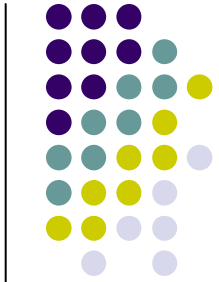
Staff Resources Expended by Divisions



- Division of Inspection Program Management (DIPM)
- Division of Systems Safety and Analysis (DSSA)
- Division of Engineering (DE)
- Division of Regulatory Improvement Programs (DRIP)

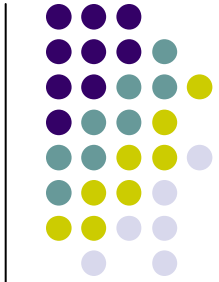
Staff Resources Expended on Safety Review by All Divisions

(* indicates contracted resources used; underlined numbers show contracted $ converted to FTE)



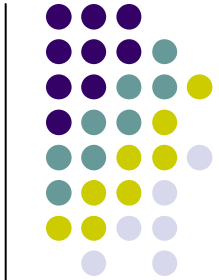
Plant	DIPM Total Hours	DIPM Total FTE	DSSA Total Hours	DSSA Total FTE	DE Total Hours	DE Total FTE	DRIP Total Hours (Safety)	DRIP Total FTE (Safety)
Robinson	964	**0.7**	2460.3	**1.7**	6519.6	**4.5**	5661	**3.9**
Ginna	717.5	**0.5**	1448.5	**1.6* (1.0 + 0.6) [$147K]**	5724.8	**3.9**	3809	**2.6**
Summer	1153.5	**0.8**	3210.9	**2.2**	5804.1	**6.1* (4.0+ 2.1) [$532K]**	4755	**3.3**

Staff Resources Expended
Environmental Review
(Including efforts by DRIP and DSSA)

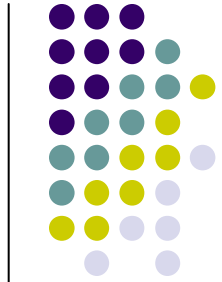


Plant		Environmental Review Hours (= to FTE)	Environmental Contract $ (= to FTE)	Total Efforts (FTE)
Robinson		2395 hours **= 1.6 FTE**	$406K **= 1.6 FTE**	**3.2 FTE**
Ginna		2663 hours **= 1.8 FTE**	$395K **= 1.6 FTE**	**3.4 FTE**
Summer		3216 hours **= 2.2 FTE**	$426K **=1.7 FTE**	**3.9 FTE**

General Observations

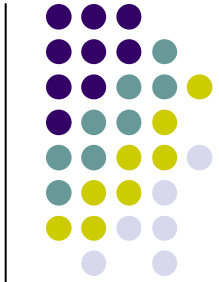


- On the numbers of hours charged
  - Summer is the highest for all Divisions
  - Ginna is the lowest for all Divisions
- Resource expended for safety review ranges from:
  - DIPM: 0.5 to 0.7 to 0.8 FTE
  - DSSA: 1.6 to 1.7 to 2.2 FTE
  - DE: 3.9 to 4.5 to 6.1 FTE
  - DRIP: 2.6 to 3.2 to 3.9 FTE
- Increase in FTE from Robinson to Summer
  - DIPM: +14%
  - DSSA: +29%
  - DE: +35%
  - DRIP: -18% (excluding efforts for environmental review)



Observations and Analysis

Review Variances



- For DSSA and DE, based on total number of systems reviewed, the FTE expenditure per system is similar

Plant	LRA Systems (Initially)	Total FTE Expended by DSSA and DE	FTE per System
Robinson	43	1.7 + 4.5 = 6.2	.14
Ginna	35	1.6 + 3.9 = 5.5	.16
Summer	49	2.2 + 6.1 = 8.3	.17

Review Variances

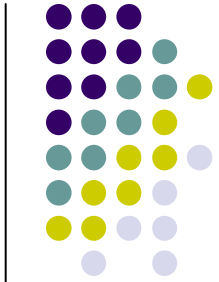
- Issues related to 10 CFR 54.4(a)(2), identified by staff, resulted in additional systems, structures, and components (SSCs) brought into scope
  - Additional systems to review
  - A new section was added to Summer SER to address (a)(2)

Plant	(a)(2) Components initially included in LRA?	New Systems Added	Other Systems Affected
Robinson	No	1	15
Ginna	Yes	0	0
Summer	No	11	34

Review Variances - Summer

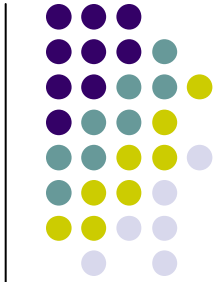
- More systems and structures to review in original license renewal application (LRA)
  - Summer (70) vs. Robinson (62)
- An expanded pool of reviewers (staff and contractor) supported multiple concurrent reviews
- Tables and the additional database was necessary in addition to LRA and was used extensively to conduct the review
- Advisory Committee on Reactor Safeguards (ACRS) interest in one-time inspection
- Extensive interactions with the applicant
  - Additional resources expended to support review, resulted in an safety evaluation report (SER) with no open items

Summary of Findings



- The efficiency of the license renewal review is highly dependent on the quality and complexity of the LRA, in addition to responsiveness of the applicant
- Utilization of new staff reviewers and contractors was necessary to support multiple and concurrent reviews and to prepare for anticipated heavy workload

Recommendation



- Implement a work planning system that will provide early indication of areas that are out of norm